

*Mediterranean demersal resources and ecosystems:  
25 years of MEDITS trawl surveys*  
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## **Distribution and spatio-temporal biomass trends of red mullets across the Mediterranean**

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Supplementary material

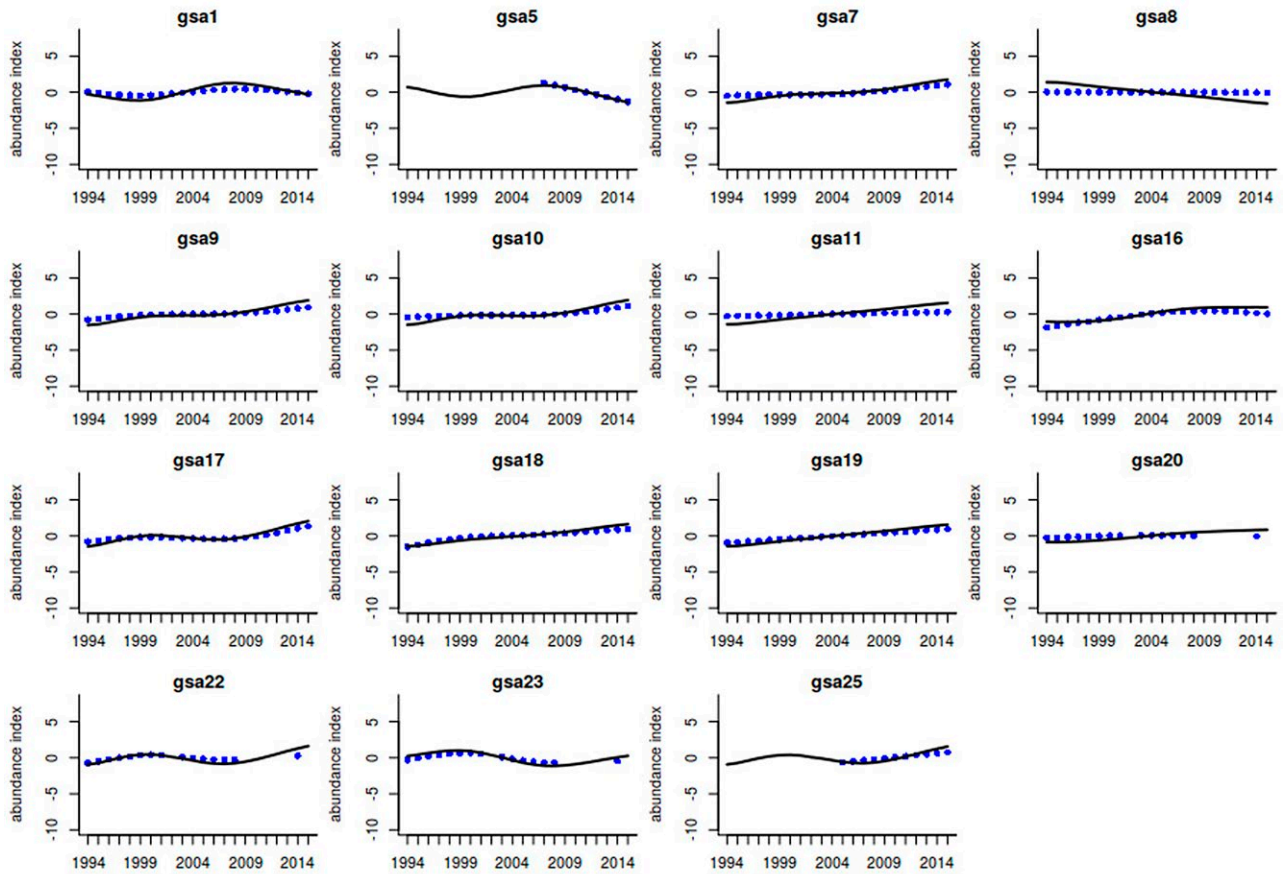


Fig. S1. – Fitted values (line) and standardized biomass indexes of *M. barbatus* by year and GSA.

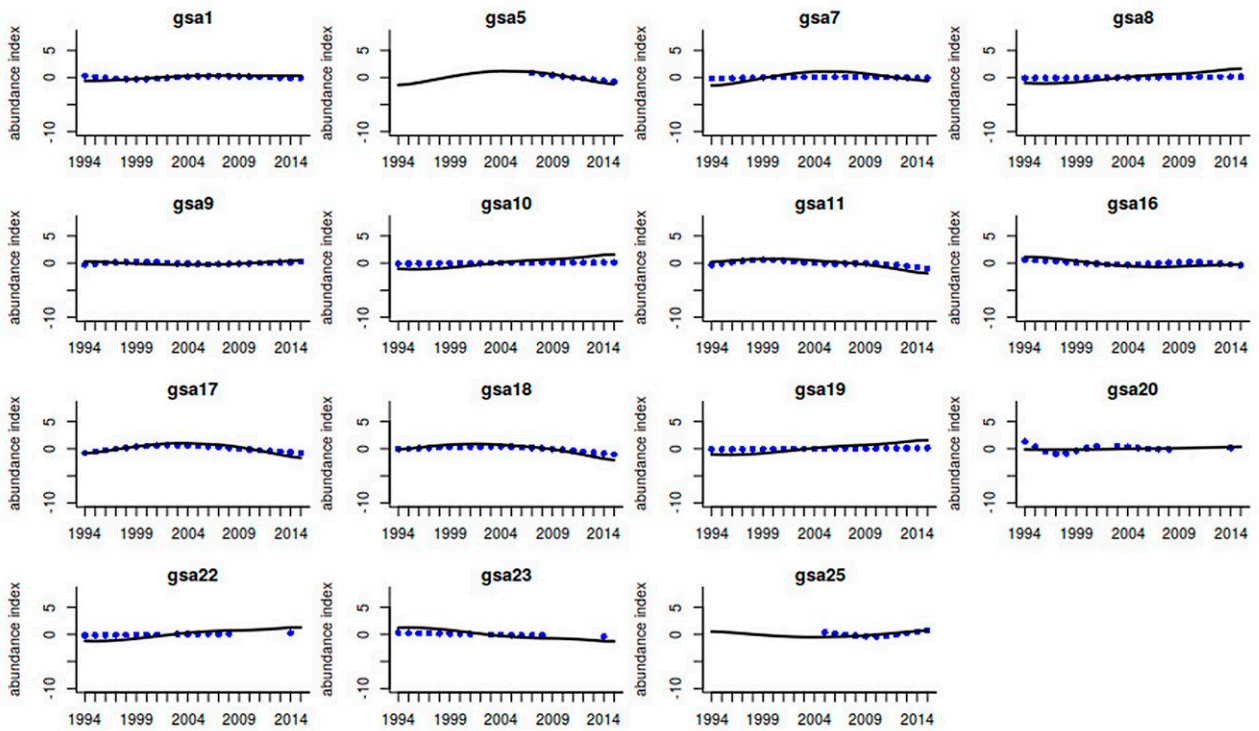


Fig. S2. – Fitted values (line) and standardized biomass indexes of *M. surmuletus* by year and GSA.

Table S1. – Analysis of deviance tables for the GAM models applied on *M. barbatus* biomass indexes in the different GSAs.

	edf	Ref.df	F	p-value
<b>GSA 1</b>				
s(Year)	3.335245	3.752963	5.135572	1.19E-03
s(Depth)	2.710464	3.001904	28.740873	1.70E-17
s(Lat,Lon)	17.865338	20.96536	17.162887	1.10E-54
Deviance explained = 0.7800034				
<b>GSA 5</b>				
s(Year)	1.000741	1.001481	43.833976	1.30E-10
s(Depth)	3.028411	3.445171	4.193971	3.37E-03
s(Lat,Lon)	21.549188	24.35983	6.707591	6.52E-19
Deviance explained = 0.6758651				
<b>GSA 7</b>				
s(Year)	3.099836	3.579545	54.83064	2.00E-37
s(Depth)	2.997409	3.508917	21.02387	7.23E-15
s(Lat,Lon)	27.572921	28.78585	40.85497	1.74E-207
Deviance explained = 0.5978377				
<b>GSA 8</b>				
s(Year)	1.001059	1.002107	0.05421135	8.16E-01
s(Depth)	2.599163	2.889314	30.30880747	1.14E-16
s(Lat,Lon)	9.766334	12.059621	4.36137273	2.24E-06
Deviance explained = 0.5626815				
<b>GSA 9</b>				
s(Year)	3.574405	3.892615	61.44117	1.65E-47
s(Depth)	3.980383	3.999239	279.18863	3.34E-223
s(Lat,Lon)	26.634597	28.517179	48.93436	3.39E-253
Deviance explained = 0.6498317				
<b>GSA 10</b>				
s(Year)	3.222359	3.670948	21.64876	1.35E-15
s(Depth)	3.681666	3.924182	89.52428	5.02E-68
s(Lat,Lon)	24.437275	27.153119	24.41404	2.14E-109
Deviance explained = 0.6864137				
<b>GSA 11</b>				
s(Year)	1.01524	1.030278	13.008963	2.83E-04
s(Depth)	3.732737	3.950188	72.190412	1.91E-56
s(Lat,Lon)	22.557447	26.543793	9.877832	9.60E-38
Deviance explained = 0.3302203				
<b>GSA 16</b>				
s(Year)	3.11864	3.582447	24.32054	4.98E-17
s(Depth)	1.003078	1.005674	113.32434	2.05E-25
s(Lat,Lon)	27.339479	28.613174	24.29931	3.43E-115
Deviance explained = 0.5748771				
<b>GSA 17</b>				
s(Year)	3.864937	3.988148	168.64287	1.63E-137
s(Depth)	3.968186	3.999094	219.05383	1.09E-179
s(Lat,Lon)	28.050589	28.939412	89.60738	0.00E+00
Deviance explained = 0.4526162				
<b>GSA 18</b>				
s(Year)	3.460161	3.831484	47.86305	5.14E-36
s(Depth)	3.885355	3.983931	106.80989	5.82E-77
s(Lat,Lon)	25.957258	28.255278	33.84446	2.89E-168
Deviance explained = 0.5904676				
<b>GSA 19</b>				
s(Year)	1.011616	1.022971	96.49018	4.71E-22
s(Depth)	2.690363	3.149898	79.29041	1.55E-48
s(Lat,Lon)	19.635589	23.297799	13.64767	6.04E-48
Deviance explained = 0.6149736				
<b>GSA 20</b>				
s(Year)	1.798056	2.189174	0.7464399	4.25E-01
s(Depth)	1.535974	1.768087	25.7361036	4.93E-08
s(Lat,Lon)	19.050257	22.93218	7.1640323	2.06E-19
Deviance explained = 0.6105294				
<b>GSA 22</b>				
s(Year)	3.477106	3.812682	7.171149	1.22E-05
s(Depth)	3.587654	3.886194	115.572978	3.84E-87
s(Lat,Lon)	26.246697	28.461454	15.377633	5.19E-68
Deviance explained = 0.5178125				
<b>GSA 23</b>				
s(Year)	3.140406	3.542358	4.755734	1.51E-03
s(Depth)	2.664722	3.147146	17.920273	8.72E-11
s(Lat,Lon)	6.105404	7.537994	4.73422	3.86E-05
Deviance explained = 0.5691011				
<b>GSA 25</b>				
s(Year)	1.000722	1.001432	8.850662	3.27E-03
s(Depth)	3.381659	3.737661	6.345404	8.35E-05
s(Lat,Lon)	11.436353	14.364692	3.914098	5.27E-06
Deviance explained = 0.4023809				

Table S2. – Analysis of deviance tables for the GAM models applied on *M. surmuletus* biomass indexes in the different GSAs.

	edf	Ref.df	F	p-value
<b>GSA 1</b>				
s(Year)	3.161466	3.629141	2.07928	2.32E-01
s(Depth)	3.868186	3.98051	28.542862	1.50E-21
s(Lat,Lon)	23.300676	26.662747	8.202271	1.06E-27
Deviance explained = 0.52453				
<b>GSA 5</b>				
s(Year)	1.001305	1.002608	43.80645	1.33E-10
s(Depth)	3.23774	3.575252	13.50772	1.74E-09
s(Lat,Lon)	26.210841	28.260532	10.32969	2.11E-37
Deviance explained = 0.5888375				
<b>GSA 7</b>				
s(Year)	1.913384	2.352321	1.025882	3.75E-01
s(Depth)	1.001219	1.002273	4.671017	3.06E-02
s(Lat,Lon)	24.719079	27.759875	16.693983	2.60E-73
Deviance explained = 0.5362836				
<b>GSA 8</b>				
s(Year)	1.0194	1.038332	0.5450814	4.76E-01
s(Depth)	1.00039	1.000631	34.4748563	1.11E-08
s(Lat,Lon)	11.17189	13.793766	5.343227	4.52E-09
Deviance explained = 0.4565079				
<b>GSA 9</b>				
s(Year)	3.287673	3.720515	2.944202	8.45E-02
s(Depth)	3.413051	3.807052	40.166843	1.43E-30
s(Lat,Lon)	24.001003	27.409868	20.692748	6.40E-95
Deviance explained = 0.3869566				
<b>GSA 10</b>				
s(Year)	1.000442	1.000882	0.2597142	6.11E-01
s(Depth)	3.84244	3.981262	15.9082461	2.07E-12
s(Lat,Lon)	5.622278	7.456302	5.3499085	3.29E-06
Deviance explained = 0.2864568				
<b>GSA 11</b>				
s(Year)	3.794239	3.973805	17.73862	4.06E-14
s(Depth)	3.91863	3.995226	62.47487	6.58E-50
s(Lat,Lon)	27.32056	28.811043	13.39936	9.78E-60
Deviance explained = 0.3128502				
<b>GSA 16</b>				
s(Year)	3.561823	3.886183	5.110776	2.94E-04
s(Depth)	3.748586	3.938694	34.527482	2.47E-26
s(Lat,Lon)	26.84692	28.60003	19.482595	1.46E-89
Deviance explained = 0.526563				
<b>GSA 17</b>				
s(Year)	3.129921	3.607009	11.206399	4.27E-08
s(Depth)	2.914772	3.412236	6.499741	1.25E-04
s(Lat,Lon)	23.541768	27.193338	7.783097	1.63E-29
Deviance explained = 0.2561995				
<b>GSA 18</b>				
s(Year)	2.745708	3.267287	7.56255	3.25E-05
s(Depth)	3.661944	3.879318	10.349626	4.36E-06
s(Lat,Lon)	20.472029	24.791741	8.649972	3.18E-30
Deviance explained = 0.2979741				
<b>GSA 19</b>				
s(Year)	1.001017	1.002028	0.7970839	3.72E-01
s(Depth)	3.844075	3.977881	19.7762281	2.45E-15
s(Lat,Lon)	7.482555	9.716561	6.4734054	2.06E-09
Deviance explained = 0.2618247				
<b>GSA 20</b>				
s(Year)	3.611608	3.883158	2.078063	0.142948241
s(Depth)	3.287364	3.664828	3.593405	0.008274185
s(Lat,Lon)	11.681975	15.317132	2.305099	0.003812417
Deviance explained = 0.4412766				
<b>GSA 22</b>				
s(Year)	1.011593	1.023049	2.631118	1.02E-01
s(Depth)	3.38738	3.779948	74.462578	9.72E-54
s(Lat,Lon)	25.884213	28.296685	20.082946	1.42E-92
Deviance explained = 0.4895741				
<b>GSA 23</b>				
s(Year)	1.000154	1.000307	1.4776095	2.25E-01
s(Depth)	3.712865	3.949588	25.9199559	6.47E-18
s(Lat,Lon)	2.000253	2.000504	0.8635837	4.23E-01
Deviance explained = 0.3599268				
<b>GSA 25</b>				
s(Year)	2.166719	2.623342	1.9102568	0.141361537
s(Depth)	1.000509	1.00093	0.4411788	0.507677568
s(Lat,Lon)	6.214226	8.203957	3.1211448	0.002454741
Deviance explained = 0.2561293				